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Reflections of an ARC Director 5: Feedback for Research Commissioners

Richard Lilford, ARC WM Director

Commissioning Future Arcs; Humble Thoughts from a Seasoned ARC Director

In the first article in this series [1] I covered the history of ARCs and provided an account of the service co-funding model that distinguishes an ARC from just another Applied Research Centre (the article elicited favourable comment from AHSN lead, Gary Ford). In the second article,[2] I dissected the concepts of research and implementation explaining that they are entangled and should not be treated as separate entities. In the third article,[3] which attracted favourable comment from the editor of Milbank Quarterly, I examined the manifold objectives that ARCs are expected to address and concluded that to meet these ARCs would need to collaborate with other NIHR infra-structure (in alignment with 'one NIHR' principles). In the fourth article, we looked in more detail at the type of research and methodologies that ARCs embrace.[4] In this, the fifth and final article in the series, we 'speak truth to power' in suggesting some principles that funders might want to consider in any future funding round for 'ARC like' research centres. These comments are offered under the premise that research is most responsive, effective and fair when objectives are transparent, achievable and specific. It is also the case that the research a nation gets is more a function of commissioning decisions than the design of the research, which is heavily dependent on budgets, time-scales and objectives.

Scope & Co-Funding Model

First, applied research covers clinical research and service delivery research (and perhaps also health systems/policy research). By custom and practice ARCs have gravitated to service delivery research. This makes sense in view of the provenance of the CLAHRC/ARC concept in the implementation science movement.[1] In any event, it would be helpful to spell out the scope of research in any 'Invitation to Tender' (ITT).

Second, in line with service development, the co-funding requirement should be retained – how can an ARC claim to be aligned with service need if the services are not prepared to invest? However, the investment should be, not in research, but in service implementations. Such a policy is consistent with service allocations voted by parliament. The co-funding should represent a commitment to fund the services that the ARC evaluates and/or that it informs/co-designs. It should not be a blank cheque to fund the research component. These arguments are spelled out in more detail in the first two articles in this series.[1, 2]

Implementation & Research

Previous ARC/CLAHRC invitations to tender implied that these are two independent activities for which an ARC is separately responsible. Hopefully, this idea has been extirpated once and for all; for the detailed argument please see

the second article in this series.[2] ARC faculty include expertise in how to implement service change. However, the services are replete with managers whose function is to lead implementation. It follows that the 'implementation lead' is really the 'implementation methods lead'. Synonyms might be the 'organisational science lead' or the 'implementation science lead'. As represented in article two, one can think of the implementation function of an ARC as a type of high-level consultancy. In Australia the network of organisations similar to ARCs have been designated as 'preferred suppliers' along with the 'big four' management consultancy firms. The ARCs work in tandem with an organisation that is academic but not research-based - the Academic Health Science Networks (AHSN). As implied by the word 'network', this organisation has broad reach into the local health and social care economy, and is well positioned to disseminate and support implementation of ARC projects - for example, the use of Statistical Process Control charts and maternity triage in the case of ARC WM. There are other organisations that ARCs may consider partnering with, such as the Commissioning Support Unit in the West Midlands. Thus, a challenge for ARCs is how their offer differentiates them from others with whom they collaborate. The answer is that they do research. However, this research takes different forms. In supporting implementations, ARCs conduct literature reviews and 'formative' or 'action' research.[5-7] Peter Jones, Director of ARC East of England, argues that the latter should incorporate research into implementation of implementation research. When it comes to more formal or summative evaluations, ARCs have at their disposal the full cannon of mixed methods, drawing on a wide range of possible designs, as discussed in article four of this series.[4] Some have argued that social care research has a distinct epistemology, but this ARC Director nails his colours to the mast; research methods should be selected to address the question, not to fit the service within which the question arises.

Quantum

As argued in article three in this series,[3] the ARC allocation has not increased in-line with inflation, while the requirements of the scheme have increased. At the risk of special pleading, an increase in funds is likely to represent good value for money. Most ARCs are heavily 'geared', meaning that every pound invested in ARCs by NIHR yields over one pound in further competitive grants. In the case of ARC WM, this gearing is one to nine according to our yearly report. As an infrastructural investment, ARCs represent a good investment. The previous ARC withheld some money for cross-ARC initiatives, and these seem to have been successful. Alternatively, or in addition, applicants may specify what work they have planned in collaboration with other ARCs (and indeed other NIHR-funded research).

ARC Themes

The NIHR contribution to an ARC has hitherto amounted to about £10m over five years. Such an allocation seems to demand some type of organising principle and NIHR has hitherto expected applicants to identify research themes. Most ARCs have identified topics such as 'mental health' or 'access to care', along with cross cutting themes such as 'organisational science' or 'health economics'. Clearly there are more topics of importance than can be accommodated in any one ARC. Indeed, the invitation to tender for the current round of ARCs specifically advised applicants not to attempt all NHS priorities recognising that 'jam can be spread too thin'. Yet, two of the subject experts on the ARC panel were mental health practitioners which may disadvantage any applicant who does not emphasise this topic (important as it undoubtedly is). Likewise, applicants who were judged weak on social science or public health were awarded their grant with conditions, even though these important topics had not been specified as a requirement. Let me be clear, I

would have no trouble with an invitation to tender that made such topics a requirement; my only point is that a reputable procurement process will spell out the essential qualification criteria.

There is another problem that the commissioner and the applicant must wrestle with. This issue concerns how tightly the research plan should be specified. On the one hand, public money cannot be disbursed with no clear objectives/deliverables. On the other hand, an ARC lasts for five years and it is required to remain sensitive to emerging needs and service priorities. Why build in requirements to reach out to diverse organisations and communities if you cannot respond to their expressed needs because the work program has already been crystallised in the application? The way we have 'squared this circle' is to lay out an initial set of activities. We state that these are subject to change if strongly indicated by events arising between application and the commencement of the work programme. However, longer-term projects will build on initial results and emerging service priorities. Our 'deliverables' therefore include a commitment to a certain number of projects over given time periods and that we will demonstrate that these have been prioritised in areas of greatest need. It would be helpful if the invitation to tender could provide some direction on this point, since what we specify in the application will then be the criteria against which we are monitored in our yearly review.

Realism Regarding Engagement & Objectives

In the third article in the series, we did the 'maths' showing that there are way more organisations that could be engaged with than could be reasonably accommodated by an ARC that receives each year less than 0.02% of the local health economy (let alone social services). We said an ARC should show that it had structures to elicit priorities from the service even though it cannot possibly reach out to each and every individual organisation. For example, the organisation Association of Directors of Adult Social Services can inform on priorities and act as a dissemination mechanism. But it would be hubristic to pretend that we could meet the specific research needs for each and every Directorate.

Many ARC objectives, such as engagement with industry capacity development, public and patient engagement and involvement, and improving inclusion and diversity, are also functions of other NHS infra-structure and host institutions. Therefore, in line with 'one NIHR' principles, we think that ARC applicants should be asked to demonstrate the added and special contribution the ARC will make, rather than simply be asked what they are doing in isolation.

Collaboration Across Themes

To use a somewhat overworked phrase, an ARC '*should be more than the sum of its parts.*' Hitherto, we have tried to ensure this through cross-cutting themes (organisational and psychological sciences, and research methods) whose faculty/research fellows work into substantive themes, such as maternity care or mental health. In designing any future ARC we will have a better story to tell about integration of themes and the development of a research culture in the services.

The Application Form

The application form for the ARCs had 26 sections and ran to some 11 pages with a further section for each theme. Our application ran to 171 pages. The committee had to assimilate fifteen such forms. This is a massive cognitive task and it is hard to imagine that members could form clear mental images of the strengths

and weaknesses of each application. I sit on many large grant awarding bodies and I am often appalled by the arbitrariness of the comments committee members make and the extent to which the fate of an application hangs on the few people that have read it thoroughly. The academic literature on grant applications assigned to more than one committee, shows that there is agreement on the hopeless cases, but that inter-committee agreement is terrible across the remaining applications.[5-7] So please try to reduce the size of the application form and, above all, the number of headings which interrupt the narrative and overload the reader. Such a reduction would be in line with government policy which seeks to improve the woeful productivity of the British worker, in part, by streamlining decision making.

Supply-Side Feedback

Some readers may think that there is little value in applicant feedback such as that offered here. Applicant incentives are not well aligned to the public good which is better left to commissioners, you might say. There is, of course, a kernel of truth in that idea. Suppliers (of research) should indeed respond to customer demand (represented by the commissioner and service user). However, this idea does not entail the notion that the supplier cannot offer ideas that may help the commissioner get what the public need. After all, manufacturers engage with their supply chains to understand their problems without relaxing their efforts to elicit value for money. And economics does not turn only on demand induced supply; sometimes suppliers induce demand to good effect. It is in this spirit that these thoughts are offered.

I thank Peter Jones (University of Cambridge) for his comments on an earlier draft.

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Does the UK Have a Coherent Plan to Deal with the Public Health and Civil Order Consequences of a Nuclear Strike?

Richard Lilford, ARC WM Director; Peter Chilton, Research Fellow; Jo Sartori, Senior Programme Manager

The Threat

Recent events in the Ukraine have focused minds on the risk of a nuclear strike on our small and densely populated country. Russia has placed its intercontinental nuclear force on increased alert and we cannot be certain that it is bluffing. Indeed, such success as Ukraine may have on the battlefield will raise the risk of nuclear retaliation according to the Nobel Prize winning game theorist Thomas Schelling. [1] The Russo-Ukrainian war takes place against a backdrop of increasing risk. First, the number of countries with nuclear weapons has increased from four to nine since the end of the Cold War, while relationships among the largest nuclear powers are deteriorating. It is often argued that the main risk of nuclear strike arises from error and miscalculation in the heat of the moment, rather than cold-blooded targeting of cities under threat of a reprisal. This may be true, but the risk of error and miscalculation is increased at times of political tension. By way of example, a nuclear strike was avoided by a hair's breadth in the context of heightened tension at the time of the Cuban Missile Crisis. On the other hand, the heroic avoidance of an overaction in the Petrov incident in 1983 and by Yeltsin in 1995, unfolded at a time of low geo-political tension. The recent analysis by the Economist [2] leads to the conclusion that the current risk is greater than at any time since World War 2. Given this threat, it seems reasonable to ask public health officials and the emergency services what they should do in the event of an attack.

The Scale of an Attack

Of course, nuclear bombardment is not easy to plan for, not least because it could take different forms. The extent of the initial and subsequent nuclear deployments could vary from release of one or two bombs (as in Japan at the close of World War 2), to hundreds of bombs. Clearly prevention is better than cure and the world should be doing everything in its power to reduce the risk of a military strike by increasing transparency, taking missiles off hair trigger alert, accounting for all for fissile material and winding down nuclear arsenals. [3] In the meantime, it is also necessary to think the unthinkable and to prepare for a possible thermo-nuclear attack. Just as climate scientists talk about adaptation, not just prevention, so we need to think how we may mitigate damage in case of a nuclear strike.

Evidence of Preparedness

We find scant evidence that the UK has made comprehensive plans to deal with a nuclear strike. We appear much less prepared than we were back in the 1960s when numerous preparations, including exercises in which the public participated, were made. There is a Cabinet Office department with responsibility for management of catastrophic risks. We trawled through government websites but have been unable to discover any materials describing a comprehensive plan to deal with a nuclear strike. While there are a number of documents that detail what those in authority should do in

the event of a non-specific emergency situation, such as what information to tell the public, and how the emergency services should respond,[4] we find very little evidence of preparation for a nuclear attack. The only mention of nuclear attack seems to be in a National Risk Register document from 2020, which includes nuclear attack alongside other non-conventional attacks (chemical, biological and radiological) and states only that planning and testing for such events occurs (pages 124-6).[5] Certainly there are detailed documents on nuclear incidents arising from nuclear power stations or nuclear powered submarines,[6] but these documents explicitly exclude nuclear war while providing no relevant hyper-link or reference to any document that might do so. Although there is a planned 'Emergency Alert' system that would send out a warning to all mobile phones in the event of a public emergency,[7] the warning period is only about four minutes, after which electronic signals would not work in affected areas. Advice on personal protection against a nuclear attack was last issued by the UK government in 1980, which advised people to 'get inside, stay inside and stay tuned'.[8] This is in line with current USA guidance, which also details how to decontaminate, when to evacuate, and how to treat radiation injuries, amongst other things.[9] However, public health would be much more than a personal responsibility if one or a small number of our cities were bombed. We were alarmed therefore to discover no comprehensive plan to deal with the fallout from a nuclear strike. One imagines the Local Authority Director of Public Health would be in the forefront of disaster management in the event that their city, or a nearby city, suffered a nuclear strike. However, a Public Health Director with whom we discussed this issue, while aware of plans to deal with a nuclear leak from a power plant, was not party to any plans to deal with a nuclear strike. The newspaper, Mail Online, carried a recent article on the preparation for such an event and the reporter (Harry Howard) also found little information regarding the government response save evidence of an underground bunker in Essex that could accommodate 200 government officials.[10] One Colonel de Bretton-Gordon is quoted by the *London News* as saying that the government could also retreat to bunkers deep under Whitehall.[11] However, this assumes sufficient warning of an attack, and a country primed to respond to government direction.

Planning for What?

In order to sensibly consider possible public health and civil order policies it is necessary to consider the scales of attack that might occur. Herman Kahn proposed an escalation ladder representing no less than 44 rungs.[12] Rung 10, for example, is reached when diplomatic relations are terminated. Leaving aside dirty bombs (a conventional bomb that releases radioactive material into the environment), battlefield bombs (less than 0.3 kilotons of TNT), and strikes on military facilities we propose a simpler classification of severities as follows:

1. One or two large bombs detonated over one or two cities. This limited scenario would occur if de-escalation followed the initial deployment. Perhaps, most plausibly, the scenario would arise when the initial bomb was released as a result of a false alarm or some other form of accident.

2. A limited city scenario where we envisage an intermediate strike involving say three to six cities in a single country. Josef Rotblat, also a Nobel Prize winner, stated that 'if a war then all-out war'. Nobel Prize or not, we do not see why this scenario is inevitable. We propose a scenario in which one country makes an attack and then the other responds proportionately. Under such a scenario two leaders could enter negotiations and a settlement may be reached, perhaps mediated by a third-party country or countries.

3. 'Doomsday scenarios', where large numbers of cities were bombed, possibly across multiple countries, resulting in the destruction of life and civilisation as we know it, at least in the Northern Hemisphere. Here a nuclear winter has resulted from massive shield of dust

thrown into the upper atmosphere, exceeding even the effects of the Mount Tambora volcano in 1815. In addition, electronic media would be completely destroyed with the loss of all financial information and electronic records.

Like the British Medical Association, who reported on the consequence of all-out nuclear war in 1983,[13] we find it difficult to draw even the contours of a plan to deal with the Doomsday scenario. So we invite readers to think, at least in the first instance, about preparations for limited and intermediate scenarios. The purpose of this article is to argue firstly that such plans should be made (if they have not already) and second, that they should be widely disseminated so that relevant parties know how they should respond and have the means to do so. The 'morning after' is not the time to open the manual for the first time. It is not enough to await instructions from the government's Cabinet Office Briefing Room A (COBRA) committee. First, the committee itself may be incapacitated. Second, valuable time would be lost in waiting. Third, COBRA's instructions would be ineffective if those receiving them had not been equipped to respond. Our argument simply put is that it is imperative to make, disseminate and evaluate plans to cope with a nuclear strike.

What Shape Might the Response Take?

Broadly speaking there are three zones of damage radiating out from the epi-centre of a nuclear strike; fireball, shock wave and radiation.[14] The inner zone is where people are annihilated by the initial blast. Further out people suffer severe burns and injuries caused by the shockwave and flying debris. Further out still, people are affected by radiation sickness in the shorter term and cancers (especially thyroid) and foetal abnormalities over a longer time-scale. One must also assume that order will break down, roads will become clogged as people flee and there will be widespread looting and personal violence.

We are advocating for development of plans, rather than proposing what form plans should take. However, we offer some thoughts, if only to counteract a sense of nihilism. First, we need to provide underground shelters in densely populated areas. The underground system is available to many in London,[11] but shelters built during the Cold War should be renovated and new shelters built along the lines of underground shelters in the US hurricane belt. We propose the concept of 'buddy cities'. Each city in the UK would have two designated buddy cities. It is the responsibility of these cities to come to the aid of the stricken city. Buddy cities would have the necessary equipment on stand-by, including protective vehicles and clothing for the police and evacuation services. A means of non-electronic communication would be established by loudspeaker (since mobile phones will not work). The police would have extended powers enabling arrest of people without trial in the first instance, subject to subsequent judicial review. Measurement of radiation should be implemented immediately and people who have been exposed should have immediate access to stockpiled iodine tablets. There should be a detailed evacuation plan that takes into account the distribution of radiation exposure. Burns centres in buddy cities should have headroom to rapidly increase capacity. Food supplies should be provided to citizens who remain in or around the affected city. This is only a start; many plans will be needed: plans to house evacuees in the buddy city , plans to detect and combat disease we hardly think about (like cholera), and, yes, plans for mass burial of the dead in as dignified a way as possible, building on lessons learned in the Boxing Day Tsunami.[15]

The above are merely suggestions and we are not pretending for a moment that we have the answers. However, policy and plans need to be tailored to the specific horrors of a nuclear strike. We propose that a committee be formed, involving multiple stakeholders, to derive an appropriate response to a nuclear strike. New laws may be necessary. We would make a strong recommendation that some form of practice or simulation should be implemented. The public

should be engaged in the whole process at every level since, after all, this is everybody's business.

The Need to Plan and to Share Plans

Working in health, it strikes us as curious that the medical profession generally, and the public health speciality in particular, have taken little interest in the risk of a thermo-nuclear strike. It may be that they think the Cabinet Office have the matter in hand. However, even if this is true, the existence of plans is not enough. There will be little that the government can do if the country is not prepared. Some people with whom we have discussed the issue suggest that widely shared plans would give potential enemies some sort of tactical advantage. We do not find this convincing. Nor have previous governments; drills were enacted during the 1960s in many UK cities and elsewhere without alarming security services or raising concerns that this would affect the likelihood or nature of an attack. The nuclear risk is entirely hypothetical, but then so are all future risks. At an individual level, it has been shown that people are more likely to survive floods and other disasters if they can run different scenarios through their imaginations and thereby formulate strategic responses.[16, 17] Similarly, countries that plan ahead and earmark resources will be best equipped to deal with disasters when they arise. It is for this reason that we advocate urgent action.

Acknowledgements

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Sustainability of Service Delivery Improvements in Lower- and Middle-Income Countries

Richard Lilford, ARC WM Director

News blog readers will be familiar with our interest in the concept of sustainability. We are doing a number of studies in different countries around the world on the sustainability of self-help groups.[1] Since we are also very interested in service delivery improvement, a recent paper in *BMJ Quality and Safety* on the sustainability of strategies to improve health care in LMIC practices caught our eye.[2]

Arsenault and colleagues conducted a secondary analysis of a recent systematic review, which had examined the effectiveness of interventions to improve the quality of clinical care by trying to improve the performance of clinical staff. However, the quality of clinical care processes was examined as a single post-intervention measure in this review. In this further study, the authors conduct interrupted time-series analyses on more than one post-intervention measurement. Only 5% of the articles provided more than one such measurement, which is itself an interesting finding and, of course, a limitation in terms of both precision and bias.

Simple training interventions were the least effective in the short-term. They were also the least sustainable. A single post-intervention measurement may therefore exaggerate effectiveness. However, interventions involving group work and feedback had a larger effect that continued to increase over time. This means that a single observation post-intervention is liable to be biased towards an underestimate.

The form that research takes is based not so much on the researchers' brilliance, but rather on how the commissioning of the research is designed. If only short-term funds are provided, then only short-term outcomes will be recorded.

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Effects of Mindfulness on the Mental Well-Being of Paediatric Trainees

Richard Lilford, ARC WM Director

Regular News Blog readers will know that the ARC WM Director is not a fan of mindfulness.[1] Nevertheless, I would have reported on this recent cluster randomised trial in JAMA Pediatrics,[2] even if it had been positive. In the event, a large cluster RCT, across 340 paediatric trainees, showed no difference between a six-month mindfulness course intervention and a control on participants' emotional exhaustion, depersonalisation, burnout, empathy or mindfulness. However, there was a similar increase in emotional exhaustion scores in both control and intervention groups compared to baseline.

Non-randomised studies have generally found in favour of mindfulness. Such studies are full of biases, however, such as regression to the mean.

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Shopping While on a Caffeine High

Peter Chilton, Research Fellow

Nearly all high-streets, retail complexes and even supermarkets have at least one place to grab a cup of tea or coffee while shopping. Places like car dealerships even offer potential customers complimentary drinks. While we already know the impact caffeine can have on our health,[1, 2] how does it impact us financially?

To look at this, a series of experiments were run in retail stores in France and Spain.[3] Over 300 participants were given either a cup of coffee (~100mg of caffeine), de-caffeinated coffee or water before entering a retail store. Analysis of the shoppers' receipts showed that those who drank caffeinated coffee spent ~50% more money and purchased ~30% more items than those who drank de-caffeinated coffee or water. Furthermore, they purchased more non-essential items.

A follow-up study was conducted in a laboratory setting using a simulated online shopping experience. In this, 200 students were asked to choose items from a pre-selected list – those who had consumed caffeine were again significantly more likely to choose items considered impulse buys, rather than practical items.

Interestingly, prior to these experiments, the authors talked to members of the public about their thoughts, finding that around two-thirds believed that drinking coffee would have no impact on their shopping behaviour. Other researchers have previously theorised that the increased alertness from caffeine could even lead to more careful shopping.

So, based on this, if you are trying to stick to a budget, lay off the coffee until you get home!

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How Does Physical Fitness in Childhood Affect Cognitive Ability in Adulthood?

Peter Chilton, Research Fellow

We already know there is a link between low fitness and obesity in childhood and poor health outcomes in adulthood.[1] However, the impact of physical fitness on cognitive development is less clear. A recent prospective study looked into this topic used a cohort of 1,244 children from 1985 who were followed up over thirty years.[2] In the original 1985 study the fitness of the children was assessed (cardiorespiratory, muscle power, endurance), along with their waist: hip ratio. Participants were assessed on simple reaction times, choice reaction times, visual memory and working memory thirty years later. Results showed that those who were fitter as children (i.e. had the highest levels of fitness and lowest waist: hip ratios) had higher psychomotor-attention (based on detection and identification tasks) and global cognition (based on all four tasks) in mid-life. There were no associations between fitness and learning or working memory. These results were shown to be independent of a number of potential confounders, including school ability, socioeconomic status in childhood, final education level, smoking habit and alcohol consumption.

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Florence Nightingale: Far More Than a Lady with a Lamp

Philip Simmons, ARC WM Project Administrator

You may think that you know the story of Florence Nightingale; how she left England, sailed to the battleground of the Crimea, volunteered as a nurse to the wounded soldiers, and, through a series of reforms, drastically reduced the mortality rate of the army hospital. Through this she became the founder of modern nursing. However, there is more to her story than this.

Florence Nightingale was born in Florence, Italy (which she was named after) on 12th May 1820 to a rich and influential British family. As a young woman she fought against the norms of the time, resisting the expectations of Victorian society that she would marry and instead dedicated her life to the service of the greater good by becoming a nurse. At this time nursing was seen as something that only the lower class would do and was not considered a serious profession. In 1850 she received four months of medical training at Kaiserswerth-am-Rhein in Germany, and in 1853 she joined the Institute for the Care of Sick Gentlewomen as the superintendent.

Crimean War

This position was cut short in 1854 when, along with 38 volunteer nurses, she travelled to the Crimean soldier's hospital in Scutari (modern day Istanbul) in order to help alleviate the terrible conditions that wounded soldiers were experiencing there. Once settled in, the nurses under her command found overworked staff, poor hygiene and mass infections were commonplace. This contributed to ten times more men dying of disease than from battle. Over the course of the next six months Florence and the nurses under her command implemented many small but significant changes, such as improving the hygiene and ventilation of the hospital, cleaning the sewers, and implementing hand washing. These practices dramatically reduced deaths in the hospital.

In order to keep up the pace of change for the hospital system in the Crimea, Florence utilised the media (who painted her as the "saintly"

lady with a lamp) and her family connections to keep not only the public informed of the good work that she and her team were conducting but also the people in power such as MPs and the wealthy elite. She did this with the pioneering use of visual statistical graphs (see online), utilising both pie charts and what was known at the time as the polar area diagram/Nightingale rose diagram (now known as the circular histogram). This was introduced to a partially numerate society and helped her audience visualise the situation and the impact that the nurses under her command had achieved.

It was through these efforts that the image of nursing was changed and imprinted in the public conciseness as a noble profession to aspire to.

Career After the Crimea

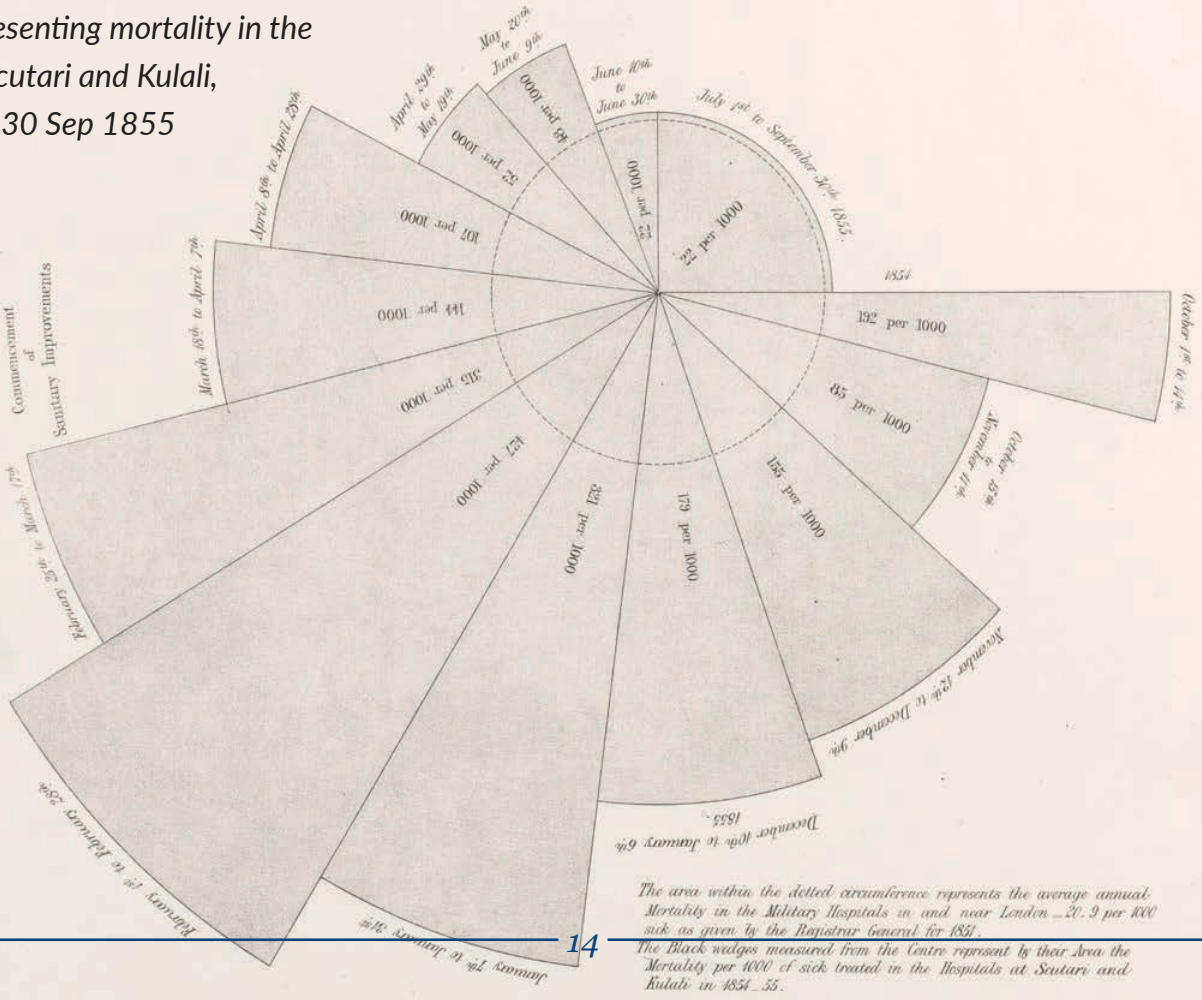
After the Crimean war Florence went from strength to strength. She was elected as the first female member of the Royal Statistical Society in 1859 for her pioneering work in the field. In 1860 a "Nightingale fund" was set up, to which the general public generously donated £45,000. This was enough for the Nightingale Nurse Training School to be set up at St Thomas' Hospital in London, the curriculum of which closely followed the book " *Notes on Nursing*", written by Florence and which is still in print today.

During the same period she made a thorough statistical study of public health conditions in rural India and successfully lobbied for a Royal Commission to be created to help reduce the death rate of soldiers. In 1873 this commission released a report on ten years of reforming the sanitary system. The report found that after implementing the reforms suggested by Florence amongst others, the deaths of soldiers from disease fell from 69 to 18 per 1,000.

Her Legacy

Not only did Florence found our modern Nursing based upon careful administration, compassion and committed patient care, but she also advanced the use of statistics to encourage those in power to help make positive changes based upon empirical evidence.

Diagram representing mortality in the hospitals at Scutari and Kulali, 1 Oct 1854 - 30 Sep 1855



Latest News and Events

Congratulations to Niyah Campbell

Niyah Campbell, the Public Involvement & Engagement Officer for NIHR ARC West Midlands, was recently chosen as a Guardian Angel by the Guardian newspaper for his work and involvement in a Walking Football group in Birmingham. In 2015 he started the group as part of a 12-week study into making sport accessible for older adults, choosing to continue to coach the group after the study ended, including running online sessions during the COVID lockdowns.

You can read more online at: theguardian.com/lifeandstyle/2022/jun/13/the-football-coach-bringing-generations-together.

ARC WM Director's Inaugural Lecture

ARC WM Director, Prof Richard Lilford, recently gave his inaugural lecture at the University of Birmingham on the topic of '*A Little Light Epistemology*'. An audio recording, along with the presentation slides, is now available to view online by clicking here.

Photographed below, Richard Lilford amongst some of his research team.

National NIHR ARC Newsletters - June 2022

The June issue of the national NIHR ARC newsletter is now available online: http://eepurl.com/h4gHHz. This issue features content on vaccinations being associated with reduced risk of long COVID; the relationship between open spaces and a sense of belonging with improved wellbeing; the difficulties faced by heart failure patients to stay well; and using creative public involvement and engagement to improve children's dental health.

To subscribe to future issues, please visit: https://tinyurl.com/ARCsnewsletter.

NIHR Training Camp 2022 - Virtual Session

The NIHR are holding a 3 day face-to-face doctoral training camp to provide guidance and practical experience in learning how to put together a successful application for funding.

A virtual session is being run on day 1, which will provide access to the introductory plenary talks focusing on how to sell yourself and your project when applying for funding; effective patient and public involvement; and what funding panels are looking for in applications.

There will also be a guest inspirational speaker who will share their academic career journey to date, including key successes and challenges faced along the way.

The virtual session runs from **12:30 on Tuesday 5th July**. For more information please visit: https://cvent.me/38X8kQ

UKRI - Future Leaders Fellowships

UK Research & Innovation have opened the 7th round of calls for *Future Leaders Fellowships*. These are highly prestigious awards with no minimum or maximum limit on funding. Awards are initially for four years, with the potential to extend for a further three. Projects can be in any area across UKRI's remit.

Awards are targeted towards Early Career Researchers. Applicants do not need to hold a PhD and there are no eligibility rules based on the number of years since PhD. However, if applicants do not hold a PhD, they must be able to demonstrate equivalent research or innovation experience or training. There are no eligibility rules based on whether you currently hold a permanent or open-ended academic position or job role.

There is a two-stage application process, with the outline application running from 6 September to 18 October, and full application from 13 September to 6 December. Further information can be found at: ukri.org/opportunity/future-leaders-fellowships-round-7/.

ARC WM Quiz

The Emergency Telephone Number 999, which enabled people to bypass queues at the telephone exchange, was introduced in the UK on 30 June of which year?

email your answer to: ARCWM@warwick.ac.uk

Answer to previous quiz: .Robert Koch developed the precursor to the Petri dish, first demonstrating it in 1881. His assistant Julius Petri then refined the plating method in 1887.

Congratulations to those who answered correctly.

Recent Publications

Babalola O, Goudge J, Levin J, Brown C, Griffiths F. Assessing the Utility of a Quality-of-Care Assessment Tool Used in Assessing Comprehensive Care Services Provided by Community Health Workers in South Africa. *Front Public Health*. 2022; **10**: 868252.

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Jones JE, Damery S, Phillips K, Retzer A, Nayyar P, Jolly K. Real-time remote outpatient consultations in secondary and tertiary care: A systematic review of inequalities in invitation and uptake. *PLoS One*. 2022; **17**(6): e0269435.

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Mwape AK, Schmidtke KA, Brown C. Instruments used to measure knowledge and attitudes of healthcare professionals towards antibiotic use for the treatment of urinary tract infections: A systematic review. *PLoS One*. 2022; **17**(5): e0267305.

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Park J-E, Kibe P, Yeboah G, Oyebode O, Harris B, Ajisola MM, Griffiths F, Aujla N, Gill P, Lilford RJ, Chen Y-F; The Improving Health in Slums Collaborative. Factors associated with accessing and utilisation of healthcare and provision of health services for residents of slums in low and middle-income countries: a scoping review of recent literature. *BMJ Open*. 2022; **12**(5): e055415.

Pocock H, Deakin CD, Lall R, Smith CM, Perkins GD. Effectiveness of alternative shock strategies for out-of-hospital cardiac arrest: A systematic review. *Resusc Plus*. 2022; **10**: 100232.

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Singh MK, Nimarko A, Bruno J, Anand KJS, Singh SP. Can Translational Social Neuroscience Research offer Insights to Mitigate Structural Racism in America? *Biol Psychiatry Cogn Neurosci Neuroimaging*. 2022.

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Turner GM, Jones R, Collis P, Patel S, Jowett S, Tearne S, Foy R, Atkins L, Mant J, Calvert M. Structured follow-up pathway to support people after transient ischaemic attack and minor stroke (SUPPORT TIA): protocol for a feasibility study and process evaluation. *BMJ Open*. 2022; **12**(6): e060280.

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